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IS 12500 (1988): 0.2 litre diesel fuel filters [TED 2: Automotive Primemovers]

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Indian Standard

SPECIFICATION FOR
0·2 LITRE DIESEL FUEL FILTERS

1. Scope — Specifies the overall dimensions, performance and test requirements of diesel fuel filters with 0·2 litre casing capacity.

2. Dimensions — The dimensions of the filters shall be as given in Fig. 1 and 2.

3. Material — Shall be suitable for the purpose intended and shall be as agreed to between the manufacturer and the purchaser.

4. Designation

4.1 The designation for the fuel filters shall include the following:

a) Capacity in litres;

b) Direction of flow-indicated by 'R' for flow from left to right or 'L' if the flow is right to left; and

c) Number of this Indian Standard.

Example:

A fuel filter having 0·2 litre casing capacity with direction of flow from left to right shall be designated as:

0·2 Litre Diesel Fuel Filter R IS : 12500

5. Test and Performance Requirements

5.1 The following tests shall be carried out to ascertain the performance characteristics of the fuel filters:

a) Mechanical tightness,

b) Through flow rate and pressure drop,

c) Filtering efficiency, and

d) Clogging.

5.2 *Mechanical Tightness* — is carried out on a new filter assembly with the insert to ascertain the leak-proof characteristics of the filter assembly at normal working pressure.

5.2.1 *Procedure* — The cover and filter casing with insert shall be tightened by the screws using tightening torque of 15 to 20 Nm. The filter assembly with its outlet blocked and its inlet connected to pressurized air supply shall be immersed completely in a bath of clean kerosene or diesel oil. Air pressure of 200 kPa shall be applied at the inlet of the filter assembly for 20 seconds.

5.2.2 The filter assembly is deemed leak-proof if there is no leakage of air.

5.3 *Through Flow Rate and Pressure Drop*

5.3.1 *Procedure* — Shall be in accordance with **3.6** of IS : 3351-1968 'Methods of test for diesel engine fuel filters'.

5.3.2 The test arrangement shall comply with Fig. 3. The graduated glass tank (*K* in Fig. 3), however, shall have a capacity of 0·5 litre.

5.3.3 The through flow rate shall be more than 20 times the actual consumption of the engine at a pressure drop of 1 000 mm of test liquid.

5.3.4 At rated flow, the pressure drop across the filter shall not be more than 1 000 mm of test liquid.

5.4 *Filtering Efficiency* — is carried out after mechanical tightness test.

5.4.1 The contaminant shall be test dust specified in IS : 3351-1968. The concentration of dust shall be 1 g/l.

5.4.2 *Test equipment* — Shall be as given in Fig. 3.

Automotive Primemovers Sectional Committee, EDC 102; Filters Subcommittee, EDC 102 : 5 [Ref : Doc : EDC 102/14(3755)]

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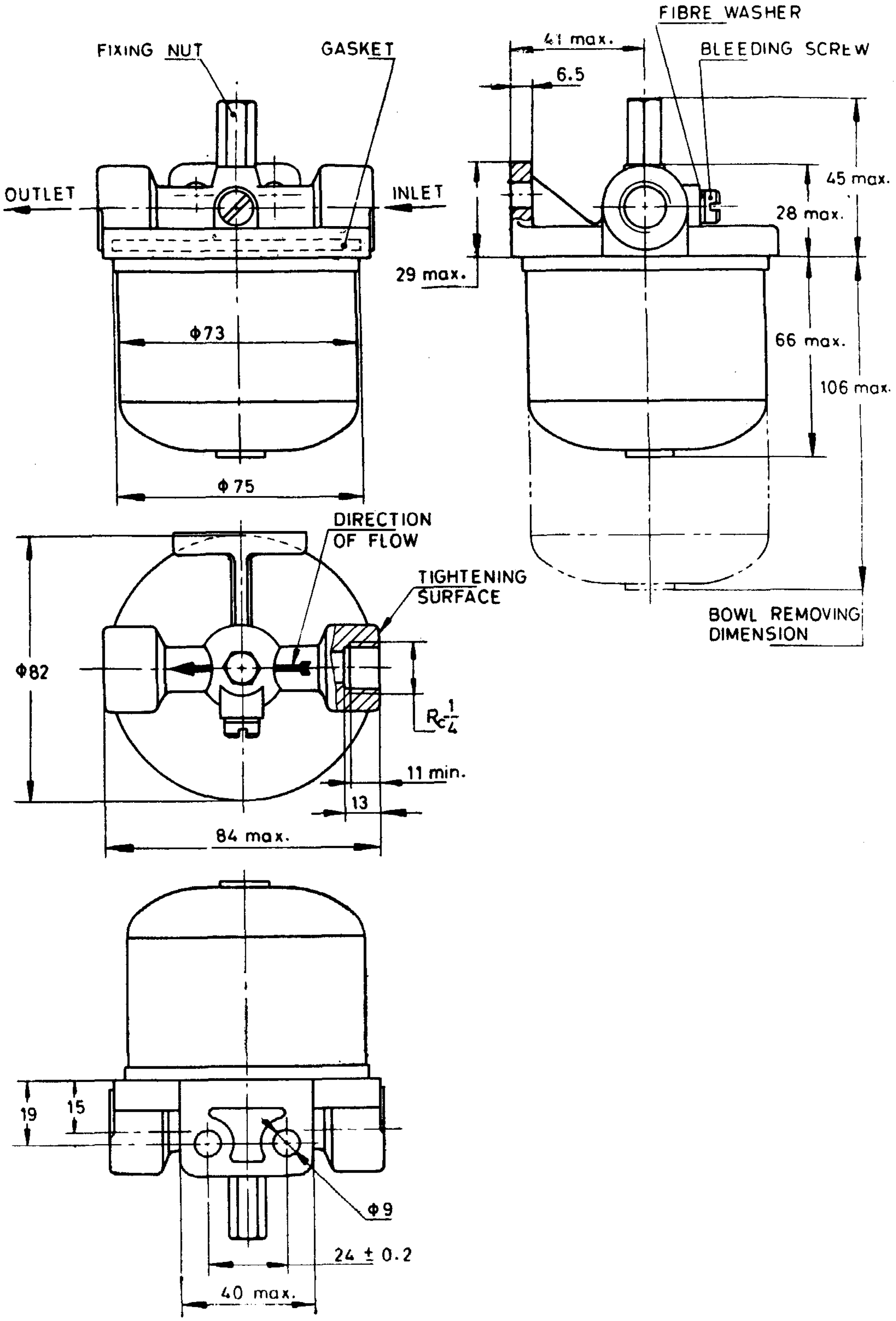
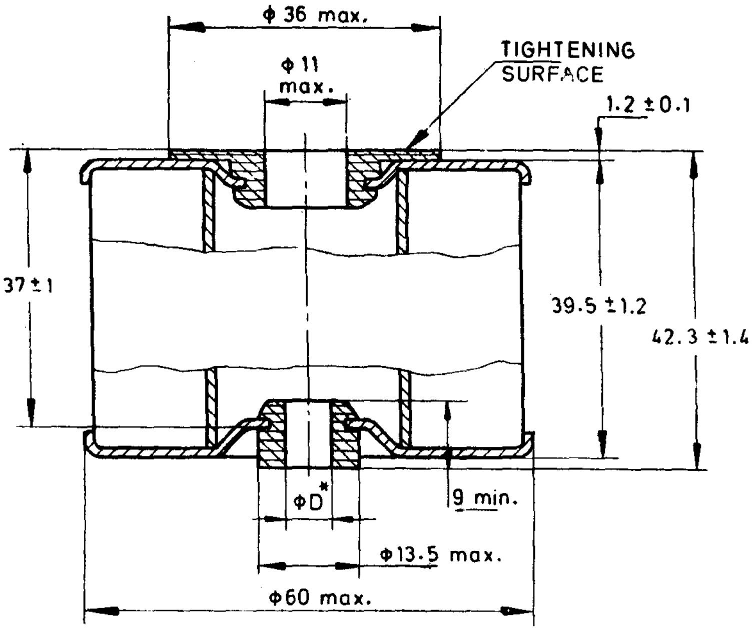


All dimensions in millimetres.

FIG. 1 DIMENSIONS OF 0·2 LITRE DIESEL FUEL FILTER



*ϕD should be tight fit for 6 h 11 bolt.

All dimensions in millimetres.

FIG. 2 DIMENSIONS OF 0·2 LITRE DIESEL FILTER INSERT

5.4.3 *Procedure* — Clamp the filter on the test rig so that the centre line of the inlet hole is exactly at 1100 mm below the top end of overflow pipe *E*. Take necessary precautions so that the test filter is leak-proof. Remove all the air from the test filter either from the bleed screw provided at the top of bowl or by removing slightly the dome nut that clamps the filter bowl. This shall be done carefully with one hand holding the bowl tightly in the assembly so that the test fluid does not leak out from the joint. Start pump *B* and achieve the level of 1100 mm of test fluid in the overhead tank. Open V_4 and let the test fluid in the filter. Close V_6. Start a watch which notes the starting time of the test. After every five minutes, take the inlet and outlet samples of the test fluid and through valves V_9, V_8, measure the flow rate by measuring tank *K*. Also note the drop across the filter with the help of the manometer tube *L*.

5.4.4 *Test dust concentration in the samples* — Shall be determined according to **4.6** of IS : 3351-1968.

5.4.5 *Filtering efficiency of filter* — Shall be determined according to **4.7** of IS : 3351-1968.

5.4.6 The filtering efficiency with test dust shall not be less than 65 percent after five minutes and 95 percent after 30 minutes of start of test.

5.5 *Clogging Test* — The through flow of the filter after 30 minutes of start of filtering efficiency test shall be at least 65 percent of initial flow.

6. Marking

6.1 The fuel filters shall be marked with designation and an arrow to indicate the direction of flow.

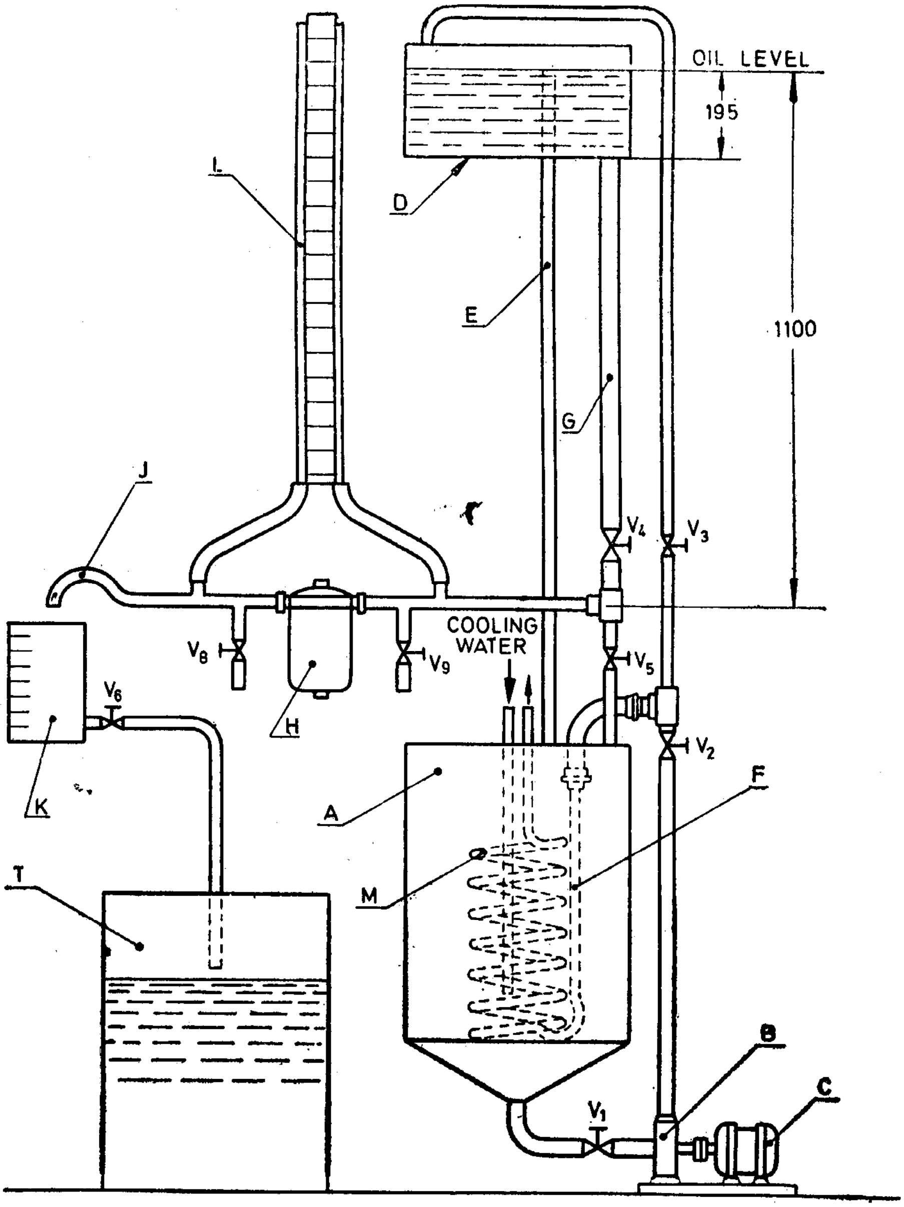
6.1.1 *Standard marking* — Details available with the Bureau of Indian Standards.

7. Sampling and Criteria for Conformity

7.1 Unless otherwise agreed upon between the manufacturer and the purchaser, the sampling of filters and criteria for acceptance shall be same as given in IS : 12499-1988 'Specification for two stage, 0·5 litre diesel fuel filters.

8. Packing

8.1 The filters shall be wrapped in a paper after treatment with rust preventive coating and packed in suitable cardboard cartons.



A — Reservoir with contaminated fluid
B — Centrifugal pump
C — Motor
D — Overhead tank
E — Overflow pipe to maintain fluid level at 1100 mm from the centre line of test filter inlet hole
F — Pipe for agitating the fluid
G — Pipe connecting test filter and test fluid tank
H — Filter under test
J — Outlet pipe — Goose neck
K — Graduated glass tank
L — Manometer tube
M — Cooling coil
T — Collecting tank
V_1, V_2, V_3, V_4, V_5, V_6, V_8, V_9, — Control valves

All dimensions in millimetres.

FIG. 3 TEST SET UP FOR EFFICIENCY TEST FOR 0·2 LITRE FUEL FILTER

EXPLANATORY NOTE

This Indian Standard forms a necessary adjunct to IS : 3169-1965 'Specification for two stage, one litre, fuel filters for diesel engines'. A separate Indian Standard IS : 12499-1988 'Specification for two stage, 0.5 litre, diesel fuel filters' has also been published.

This standard is aimed to help the engine manufacturers of smaller capacity engines, particularly for constant speed applications.

IS : 3351-1968 'Method of test for diesel engine fuel filters' as well as IS : 3169-1965 have also been taken up for revision.

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